Passed March 7th 1828

An Inaugural Essay
on
Cynanche Trachealis,
for
The Degree of Doctor of Medicine
in
The University of Pennsylvania,
by
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January 16th 1828.

No disease to which the infant frame is subject, is more alarming in its progress, or more dangerous in its tendency than Cynanche Trachealis. It requires the promptest and most unremitted attention of the practitioner, on account of the evidently extreme suffering of the patient and the danger of a speedy and fatal termination. It is known by the common names of Croup and Hives. Croup is a Scotch term, and is supposed by Dr. Cheyne to have been originally roup which is derived from the French word roupie signifying a catarrh. Hives is of American origin, and is thought by Dr. Hosack to be a corruption of Heaves from the heaving of the chest which takes place in the course of the disease. The history of Croup commences as late as the middle of the last Century. It is still a subject of dispute whether it existed antecedent to that period, or whether, owing to the almost entire neglect with which the diseases of Children were treated it was unknown

or not noticed. The latter opinion is, I think, much the most probable. But this as it may however, the first treatise which attracted attention to the disease was published by Dr. Home of Edinburgh in the year 1765, who from its most prominent symptoms applied to it the name of 'Suffocatio Stridula'. A dissertation of considerable repute was subsequently published on the subject by Michaelis of Gottingen, by whom it was entitled 'Angina polipora vel membranacea'. Croup is almost entirely confined to children before the age of puberty and the most common period in which it occurs, is from the third to the fifth year. There are some rare instances of its occurrence in advanced life. It was asserted by Cullen that it never attacks children before they are weaned, but Dr. Cheyne relates a case of it in a child of the age of three months, and numerous similar instances are recorded by different practitioners. This disease occurs most frequently in situations on the seashore, or in places exposed to the influence of large swamps or marshes. There are places

however, thus exposed, in which it does not prevail. The town in which I reside, (Wilmington, North Carolina,) is but six or seven miles from the sea and is completely sur=
=rounded by swamps and rice-fields; and the dampness of the air which ~~exists~~ almost always exists to a greater or less extent, seems particularly calculated to produce the disease or to favour its prevalence. But it is of compara=
=tively rare occurrence. Of the Causes of Croup, by far the most common is exposure to a Cold damp atmosphere and hence in some places it is even difficult to raise chil=
=dren. It is sometimes also produced by worms and other irritations in the alimentary canal. A full indigestible meal, taken just before going to bed is exceedingly apt to produce it. Dr. Cox mentions a case which occurred in his own family, caused by a drop of wine getting accident=
=ally into the trachea. Croup has been said by some to arise from contagion, but the opinion is entirely groundless. It sometimes prevails epidemically. This is said by Dr. Caldwell to have been the case in Virginia in the year

1799 when General Washington fell a victim to it. It is said also to have produced considerable mortality in this City in 1809. To the circumstance of its prevailing as an epidemic occasionally, may probably be attributed the origin of the erroneous opinion of its contagious nature.

In treating of the Symptoms and means of cure in this disease, it is usual and necessary to divide it into several distinct stages. Dr. Cheyne, in his Essay on Croup divides it into the Inflammatory and Purulent stages, but this division though followed by other authors, is imperfect, as it does not include the forming stage. This is a highly important one, as it is then that the disease is most easily arrested by the exhibition of proper remedies. I shall therefore pursue the plan followed by Dr. Dewees in his very valuable and interesting work on Children. He divides it into three stages - 1st The forming stage - 2d. That in which the disease is completely formed - and 3d. The Congestive. The Symptoms of each of these differ considerably from the others. It has been ob=

served that in a majority of instances, the patient is dull and heavy and is little disposed for amusement for some days previous to the attack, and that the disease advances with the ordinary symptoms of a common catarrh. It does occasionally however come on without any catarrhal symptoms and the child frequently retains its usual cheerfulness until the moment of attack. The symptom which usually first excites attention is a cough attended by a peculiar ringing sound, which is one of the most certain characteristics of Croup. It has been compared to a variety of sounds, as the crowing of a cock, the barking of a dog, and the braying of an ass; and probably it does in many instances closely resemble each of these. So striking is the sound however that the practitioner, after having heard it once or twice cannot fail to recognise it. In this stage it attends only the cough; the voice is not affected by it. There is at first little or no disturbance of the circulation; the skin is pale and cold without any sense of chilliness on the part of the pa=

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=tient; no marks of inflammation are presented by the fauces, and the tongue in its appearance is nearly natural. The duration of the first stage is very va==rious; it may continue for several days and on the ap==plication of some exciting cause be followed by the second, or the latter may supervene in a much shorter time. An aggravation of the above symptoms and the addition of others, mark the approach of the second stage, and the disease becomes fully formed. The cough is very much increased in violence and the paroxysms are longer and more frequent. The hoarseness which at first attended only the cough, is now distinctly perceived on any attempt of the patient to speak; the pulse is fre==quent; the face is much flushed; there is great difficulty of respiration which is increased by every attack of cough, an indescribable uneasiness exists with restlessness; and the patient frequently rises in bed, in hopes of dimini==shing the dyspnœa. The disease now rapidly advances to the third or Congestive Stage. The paroxysms of

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cough become much more frequent and long continued, and are followed by extreme prostration; the difficulty of breathing is very much increased by the determination of blood to the lungs; the wittlessness is so great as to render every position intolerable; the head is thrown back and the patient gasps for air; the face which was before flushed, is now pale and livid; the voice becomes less harsh and ringing and assumes a wheezing sound; the shoulders are elevated at each inspiration and the heart thumps violently. The effects of this thumping of the heart may sometimes be distinctly seen upon the sides of the thorax, and even the bedclothes are occasionally elevated. Death frequently takes place suddenly after an attack of cough, and sometimes insensibility and stupor close the scene; but it generally happens that the sufferings of the patient continue until the last moment. "The countenance" says Dr. Dewees at the conclusion of his description of the symptoms, "is now anxious beyond expression, the eyes become more

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piercingly brilliant and beseeching – they eloquently im=
=plore a relief which neither affection nor science can
afford; and the poor sufferer expires with a look full
of supplication and anguish." When Croup terminates
fatally, death is almost invariably produced by a me=
=chanical obstruction of respiration. And this may be
caused by the adventitious membrane which some=
=times lines the trachea acting as a valve and preventing
the entrance of air into the lungs, or by an accumulation
of matter in the trachea and bronchia, or by a spas=
=modic action of the muscles of the larynx or of the
muscular structure which enters into the composition of
the trachea itself. When the disease terminates favourably
the inflammation is followed by resolution; the spasmodic
action ceases, and free expectoration takes place.

The duration of an attack is various; it has been known
to end fatally in twenty four hours, and instances are re=
=corded of its continuing for weeks. But it usually runs
its course in from three to five days.

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In the early stage of Croup, it may almost always be cured by the prompt administration of proper remedies; but after it is somewhat advanced the Prognosis is by no means so certain. The most favourable signs are a diminution of hoarseness succeeding the operation of medicines; the expectoration at the same time becoming less difficult. The termination will probably be unfavourable if the system obstinately resists the action of remedies, and the symptoms continue to increase in violence. Heaving of the shoulders and thumping of the heart are said to be invariably fatal signs.

Post mortem examinations prove the existence of inflammation in almost every case. The mucous membrane is not only affected but the muscular fibres of the larynx and trachea are implicated. The trachea and bronchia are found loaded with mucus and lymph mixed frequently with a fluid resembling pus; and occasionally a tough substance in the form of a membrane lines the inner surface of the tube. The ~~formation~~

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of this membrane has been denied by authors of the highest respectability, but having seen it myself in one instance, I am of course bound to believe in its existence. If death takes place in the Congestive Stage the lungs are found heavily engorged with blood.

The first object in the Treatment of Croup when in ~~in~~ its forming stage is to produce emesis, and the best article that can be used for this purpose is the Compound Syrup of Squills or Cox's Hive Syrup. By its combined emetic, cathartic, and diaphoretic properties, it cleanses the prima via, and equalises the circulation. It is very highly recommended by the Professor of Materia Medica in this University; and from his experience in the management of this disease as well as from the united testimony of all who have used the remedy there can be no doubt of its efficacy. In addition to this some stimulating liniment or a sinapism should be applied to the throat, and the patient carefully defended from cold. In the early stage when only cough and the

catarrhal symptoms prevail, this plan will rarely fail to give relief. But if from neglect of remedies or from any other cause the disease becomes fully formed, or if the practitioner, as is very frequently the case, is not called until this takes place, the treatment must be more active. An important object ~~object~~ in this stage also is to produce vomiting; but it is strikingly characteristic of this disease when at its height, that it resists the action of an emetic sometimes with the most unrelenting obstinacy. It is therefore necessary to give the remedies in large doses and to use auxiliary means to promote their operation. The most prompt and active emetic is a combination of ipecac. with tartrate of antimony. The addition of a small quantity of calomel adds much to its efficacy. I have repeatedly seen mercurial emetics of this kind prescribed by my father in several inflammatory affections of the throat and always with the most decided advantage. To promote its operation the warm bath should be used and the

patient kept in it for fifteen or twenty minutes. These means rarely fail to produce the desired effect and materially to relieve the symptoms. But by far the most important remedy is Bloodletting and this should be employed so as to have a full and decided effect on the system or no good will result from it.

"A little bleeding is a dangerous thing,
Bleed free, or open not the vital spring."

It is truly surprising to what an extent this operation may be carried even in very young children. Dr. Cooke relates the case of a child of the age of three or four years, from whom he abstracted twenty five ounces of blood in the course of one hour. The child, although almost in articulo mortis before the operation, recovered perfectly. Topical bleeding in aid of the lancet is a very valuable remedy, and for this purpose, leeches are far preferable to any other means we possess. If cups are used they should be applied to the sides, and not to the front, of the neck. After bleeding, we may again resort, if necessary to an emetic. Its opera=

tion is now almost certain, and these remedies will rarely fail to put a stop to the progress of the desease. The more violent symptoms being subdued a large dose of calomel may be given. By removing irritating matters from the bowels, it prevents the tendency of the desease to return. If any cough or uneasiness remains small doses of the compound syrup of squills will be found very useful.

If, however, the desease is not cured, and the inflammation extends to the minute ramifications of the bronchia, producing the symptoms of the Congestive stage, the practice is widely different. If venesection is resorted to at all it must be in small quantities, for so great is the determination to the lungs in this stage that a sudden abstraction of blood from the system will sometimes produce even fatal prostration. Topical bleeding by leeches or cups is a valuable substitute for the lancet in these cases. A large blister and other stimulating applications to the chest are indispensable. Eme-

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=ties and the warm bath will also be of great service. These may be followed by expectorant doses of the compound syrup before alluded to. But after the disease has ad=
=vanced to this stage, all our remedies are in many instan=
=ces unavailing and the patient rapidly sinks. We must however, never abandon a patient, for owing to the na=
=ture of the disease and to the great tenaciousness of life in children, recoveries frequently take place under circumstan=
=ces, apparently desperate. Much dispute has arisen concern=
=ing the propriety of the operation of bronchotomy in the last stage of Croup for the purpose of abstracting the membrane. In cases where all hope of recovery is abandoned and when the symptoms indicate the presence of the membrane, I think, there can be no reasonable objection to the operation. If the life of the patient is saved by it and the dying infant thus restored to the arms of its distressed parents, what a pleasing gra=
=tification will it afford the practitioner! and if it fails he will at least have the satisfaction of being conscious that he has discharged his duty.